SECTION 16

LIFESAVING

16.1 REFERENCES

(16A) Code of Federal Regulations - 46 CFR Chapter I

16.2 INTRODUCTION

This Section contains the Contractor Design and Provide general requirements for the Lifesaving and Rescue equipment. The Contractor's attention is specifically drawn to the requirements of the *HIGH SLIDE MARINE EVACUATION SLIDE (MES) STATIONS INSTALLATION* Subsection in this Section of the Technical Specification relating to the approval of the Marine Evacuation Slide System.

For WSF Fleet-wide Standardization purposes, End No. 1 of the Vessel shall always be considered the bow, and this designation shall delineate port and starboard, fore and aft wherever they are addressed in the Technical Specification.

16.3 GENERAL

Lifesaving and Rescue equipment shall be provided and sized to satisfy all USCG requirements, as well as Reference (16A) Subchapter W Regulations, for the full complement of 1,500 Passengers and its Crew between certain properly equipped ports located on the United States waters of Puget Sound.

Life saving appliances and arrangements shall be marked as set forth in the requirements of 46 CFR, Subchapter W, and as set forth in this Section and other Sections of the Technical Specification.

NOTE: As set forth in the *DELIVERY* Article of **VOLUME III** – *CONTRACT PROVISIONS*, the Contract Work shall be scheduled such that the Vessel will have the maximum possible USCG re-inspection interval when it is Delivered. Work such as life saving equipment certification, fire fighting/monitoring/alarm system certification, fire hose testing, life jacket inspection, and sea valve inspection shall be accomplished as near to Delivery as possible, but within sixty (60) days prior to Delivery in order to provide WSF with the maximum time before required USCG re-inspections.

16.4 HIGH SLIDE MARINE EVACUATION SYSTEMS (MES) AND LIFE RAFT INSTALLATION

Provide two (2) complete High Slide Marine Evacuation Systems, one (1) for each side of the Passenger Deck as specified below. Each system shall consist of a dedicated, lockable MES Station with one (1) 128-person High Slide Marine Evacuation System on the Passenger Deck, an additional 128-person open-reversible Link life raft (HSC) installed in a stowage rack on the Sun Deck on the same side, and in close proximity to the slide deployment area, and all associated ventilation, lighting, strobe lights, communications, rigging, guards, and signage. The associated Sun Deck Link life raft shall be released by means of a remote Hammar release from within the MES Station on the Passenger Deck.

The life rafts systems shall be **LIFERAFT SYSTEMS AUSTRALIA (LSA),** 128-person open-reversible life raft (HSC). All life rafts shall be USCG fitted and approved. Due to WSF operational concerns, final location of the MES Stations and Link life rafts shall be approved by the WSF Representative.

NOTE: The High Slide Marine Evacuation Systems including, but not limited to, Slide/life raft and Link life rafts (with stowage rack and remote (Hammar) release), deck housing, strobe lights, lighting, communications, rigging (bowsing), "strong back" type lifting frame, and signage are a new WSF Fleet-wide Standard. These systems shall be provided by and/or in support of the vendor listed below to produce complete, operable and Authoritative Agency approved MES Systems. ***No system substitutions will be allowed***.

LIFERAFT SYSTEMS AUSTRALIA
Marine Evacuation System
#102 - 2965 Horley Street
Vancouver, BC V5R 6B9
Canada
Ph: +1 (604) 780-0016
Fax: +1 (604) 431-2924
E-mail: v.prato@LSAMES.com
Web: www.liferaftsystems.com.au

Contact Person: Mr. Vlad Prato PE
North American Manager

Design and provide the installation of two (2) **LIFERAFT SYSTEMS AUSTRALIA** High Slide Marine Evacuation Systems (MES) in locations to suit the design of the Vessel. See **FIGURE 16-2** below. The systems provided shall meet all manufacturer's

requirements, Authoritative Agency requirements, and as set forth in the Technical Specification, to include the following:

A. MES evacuation raft/slide assemblies.

B. MES Slide assembly lifting appliance (one (1) total).

C. MES Station No. 1 (End No. 1, Starboard) and No. 2 (End No. 2, Port). See **FIGURE 16-2** below.

D. Self tending bowsing lines, to include staples, and flat bar and lightweight cable ties for the browsing lines.

E. Public Address and CKT "4JV", Sound Powered Phone System as set forth in Section 95 of the Technical Specification. WSF Drawing No. 8300W-505-95-01 (*latest revision*) represents emergency communications phone system amplifying the methodology acceptable to WSF.

F. Lighting and strobes as set forth in Section 92 of the Technical Specification. WSF Drawing No. 8300W-505-92-01 and No. 8300W-505-92-02M (*latest revisions*) represents lighting and strobe light systems amplifying a methodology acceptable to WSF.

G. Safety Markings, and MES Signage (local and on the Vehicle, Passenger and Sun Decks).

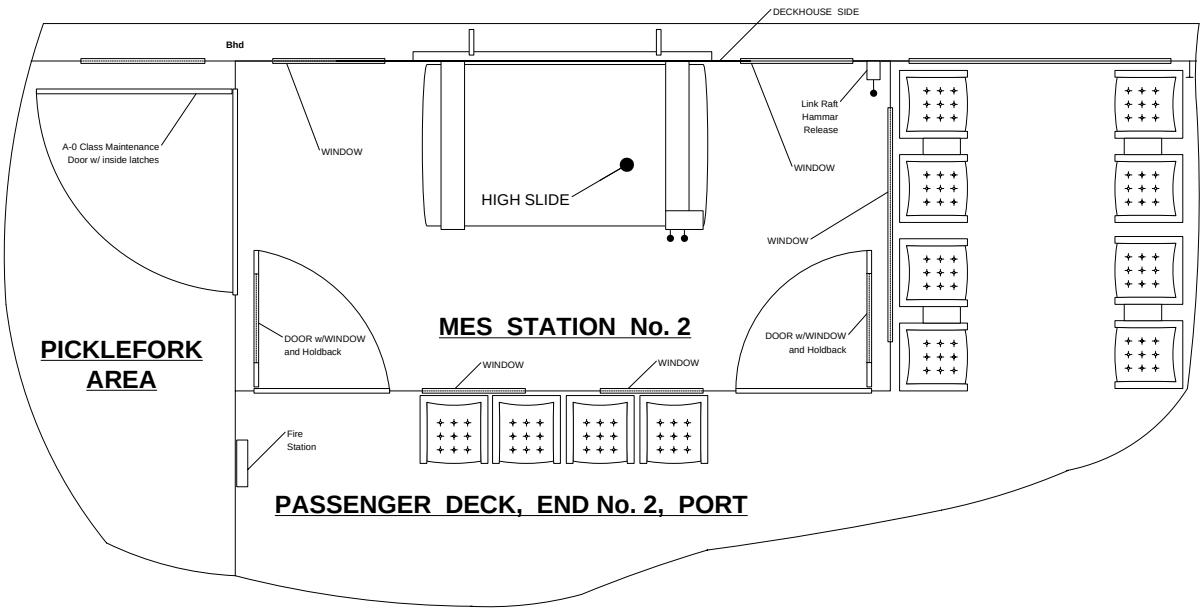

FIGURE 16-2
Typical MES Station Layout
No Scale

The MES Stations shall be designed and provided so as to meet all Authoritative Agency approval.

Unless prohibited by Authoritative Agency rules, the design for the stations shall be provided with the following:

1. Each of the two (2) Passenger Deck MES Stations shall be located one (1) each, of each Passenger Lounge sharing the bulkhead between the Picklefork and the Passenger Lounge (End No. 1, Starboard and End No. 2, Port) with a 128-person open-reversible link life raft (HSC) provided on the same side of the Vessel at the Sun Deck level for that End.

2. All MES Station interior bulkheads shall be steel with fabrication matching the exterior house bulkheads.

3. The MES Station shall be provided with two (2) lockable Passenger access doors with windows, one (1) A-0 Class rated maintenance door through the weather bulkhead between the Picklefork and the Passenger Lounge, a minimum of five (5) bulkhead windows (two (2) of which shall be located, one (1) each on either side of the MES deck housing on the outboard Passenger Deck bulkhead for launched raft viewing purposes), joiner work, lighting, a 115 volt general purpose

receptacle, padeye in overhead above slide/raft apparatus, and ventilation. Installation shall match the design, type, color, and quality of the surrounding Passenger Deck area. The two (2) inboard bulkhead windows indicated on **FIGURE 16-2** shall be sized and located so as to provide a clear bulkhead area between the two windows of 24" wide × 48" high which provides an area to install a LSA informational poster on the Passenger cabin side of the bulkhead.

4. The two (2) Passenger access doors shall be sized to a thirty-six (36) inch clear opening. The one (1) maintenance door shall be sized to allow for the MES Slide unit to be removed through the door opening using a pallet jack, onto the Picklefork area. The maintenance door shall be "inside only" operable latched with no outside (weather side) knobs or latches. See Sections 3, 4, 5, 6, 12, 21, 24, 25, 90, 92, 95, 100, and 101 of the Technical Specification for additional requirements. The Passenger access doors shall be of the aluminum materials type as set forth in the *Non-Tight Weather Screen Doors* Subsection in Section 4 of the Technical Specification. All doors shall be provided with rubber-tipped bumpers with catch hooks as set forth in Section 21 0f the Technical Specification, and shall not have door closures provided.

5. Deck treatment shall be Structural Fire Protection underlayment, to meet regulations, and non-skid as set forth in Sections 6 and 14 of the Technical Specification, color "HAZE GRAY". The non-skid coat shall be color coated with two (2) coats of "HAZE GRAY" (INTERNATIONAL tint No. K705) Intercare 755, 2 mils (DFT) each coat to cover.

6. The Picklefork deck outside of the maintenance door shall be ramped along with the Passenger double doors exiting the Passenger cabin area to the Picklefork to present a smooth transition for pallet jack passage between the Picklefork area and the MES Station. See Section 6 of the Technical Specification.

7. Installation of the MES Stations on the Passenger Deck shall require that certain Upper and Lower Vehicle Deck openings in the side of the Vessel be blanked-off in the Contractor's design to prevent the possibility of flames damaging a slide assembly when deployed. WSF desires that these blanked-off areas be kept to a minimum and that distraction from the aesthetics of the Vessel be kept to a minimum.

Unless prohibited by Authoritative Agency rules, the outboard MES doors provided shall be of aluminum materials as available from LIFERAFT SYSTEMS AUSTRALIA (LSA).

Provide one (1) complete **LIFERAFT SYSTEMS AUSTRALIA** "Training" High Slide Marine Evacuation System consisting of a nine (9) meter twin path slide and fifty (50)

person open reversible platform, as training equipment. This training MES shall include the standard MES stowage cradle, but does not include the inflation system. The training MES shall be capable of being mounted either onto an existing WSF training Vessel or onto a shore based platform at a WSF facility. Provide loading onto a WSF truck for transport to a WSF site when requested by the WSF Representative

NOTE: All Contractor furnished fasteners shall be Type 316 stainless steel.

16.5 RESCUE BOATS AND DAVITS

Two (2) Rescue Boats, with davits, cradles, and controls, shall be provided. The boats shall be completely equipped as required by 46 CFR §160.056. Each boat shall be a ZODIAC Hurricane Model H472 SOLAS approved with inline console, Rigid Hull Inflatable Boats (RHIB) and rigging, with a HONDA 50hp four-stroke outboard motor with power trim, and **all additional SOLAS required equipment**. Each boats outboard motor shall be "broken-in" in accordance with the manufacturer's specifications prior to Vessel delivery.

NOTE: For WSF Fleet-wide Standardization purposes, Rescue Boat No. 1 shall be on End No. 1 and Rescue Boat No. 2 shall be on End No. 2.

Control stations for hoisting and lowering each Rescue Boat shall be at the forward end of the respective Rescue Boat.

NOTE: ZODIAC Hurricane Model H472, inline console Rigid Hull Inflatable Boats (RHIB) and rigging, with 50 HP HONDA electric start motors are a WSF Fleet-wide Standard. These systems shall be provided by the vendor listed below. ***No system substitutions will be allowed***.

Inflatable Boat Works
101 Nickerson St.
Seattle WA 98109

Ph. # (206) 284-6020 -- Contact Person Mr. Steve Ingle

Principal characteristics are: length overall:15 feet - 5 inches; beam overall: 6 feet - 7 inches; draft-23 inches; weight: (light)-712 pounds. Each Rescue Boat shall be equipped with a 4-point low lift bridle (see **FIGURE 16-1** below), WSF design helm railings, rear seat grab-rails, dual batteries, battery charger connection at the aft end of the center console, lashing assemblies, tag lines, bow painters, and a standard WSF rigging/accessory equipment kit.

For WSF Fleet-wide Standardization purpose each Rescue Boat/ Davit shall be provided with a CRANSTON-EAGLE MARINE HOOKS, Model APR-206-CB/CBH, 4400 pound safe working load quick-release hook assembly. These hooks are available through Lindgren Associates, Inc., Ph. # (703) 244-9406 – Contact Person Mr. Phil Lindgren.

Each boat shall be provided with a sea painter, in addition to standard equipment.

All ferrous metals of boat gear and boat handling including blocks, fairleads, shackles, etc., shall be hot dipped galvanized, or inorganic zinc coated.

The Contractor shall design and provide a U.S. Coast Guard approved battery charger system for each Rescue Boat station. Locate the battery charging terminal boxes inboard of each Rescue Boat so as not to interfere with slewing of the Rescue Boat. Design shall be similar to that installed on WSF Issaquah Class Vessels and shall include for each system: charger, portable power cable, male & female connectors, terminal box, on/off switch with pilot light, and those other components to make a complete and operable system.

Four (4) galvanized cleats shall be provided on each side of the Vessel for use with Rescue Boat tag lines. The locations at which the cleats are installed shall be approved by the WSF Representative prior to installation.

Rescue Boat Stations shall be enclosed on the inboard side with $^{3}/_{16}$ inch thick steel bulkheads and double doors meeting USCG "A-0" and "A-15" Class ratings, respectively, at the Vehicle Deck locations so as to protect the Rescue Boats, prevent public access, and support maintenance as set forth in Sections 3 and 4 of the Technical Specification.

16.5.1 Rescue Boat Motors

16.5.1.1 Regulatory Requirements

The Rescue Boat motors shall be compliant with Federal EPA emissions regulations for outboard motors currently in effect and those slated to become effective in 2006.

16.5.1.2 Motor Characteristics

The motors shall be a HONDA 50 HP , 4-cycle, 3-cylinder, 3-carburetor, long shaft motors. The weight of each motor shall not exceed 205 lbs. dry. Each motor shall have power trim and tilt. Each motor shall be equipped with remote controls suitable for installation on ZODIAC 472 RIB with center console. Each motor shall have a stainless steel propeller guard installed.

The fuel system shall be compliant with UL 1185 for portable marine fuel tanks. The fuel hose for the connection between the motor and the tank must meet USCG Type A requirements.

Motor ignition keys shall be keyed to WSF Fleet-wide Standard ignition keys so all motors of the same brand have identical keys.

Each motor shall have instrument gages displaying engine RPM, over speed indication, hour meter, volt meter, and oil pressure.

16.5.1.3 Documentation and Spare Parts

Each motor shall be furnished with a spare parts list to allow the Crew to order spare parts. Each motor shall be furnished with a shop maintenance manual and an operator's manual.

The following spare parts shall be furnished for each motor as called for in the motor ordering document:

1. One (1) propeller
2. One (1) extra fuel tank
3. One (1) water pump kit
4. Two (2) lube oil filters
5. Three (3) spark plugs
6. One (1) dead man switch and lanyard
7. One (1) spare ignition key

16.5.2 Rescue Boat Equipment

Provide the following equipment in **TABLE 16-1** for each Rescue Boat:

TABLE 16-1

USCG Approved Rescue Boat Equipment

Qty is per Rescue Boat

Equipment	Quantity	Equipment	Quantity
Bailer	1	Paddles	2
Boathook	1	Pump	1
Compass, illuminated	1	Radar reflector	1
Fire Extinguisher	1	Repair Kit	1
First Aid Kit	1	Sea anchor	1
Flashlight	1	Searchlight	2
Heaving lines (with rings)	2	Sponge	1
Knife	1	Tow line, 50 LF long	1
Ladder	1	Whistle	

16.6 RESCUE BOAT LIFTING BRIDLES

WSF lifts the Rescue Boats with personnel in them and the rigging must be rated and tested accordingly. The fully loaded weight of the boat is less than 1,900 lbs. For Fleet-wide Standardization purposes, wire rope leg materials shall be as specified in WSF Drawing No. 8000W-524-16-01, sheet 3, and this Subsection of the Technical Specification.

NOTE: **FIGURE 16-1** below replaces the spreader bar in the above mentioned drawing.

16.6.1 Sling Assembly Components

For WSF Fleet-wide Standardization purposes, each sling assembly is made up of four (4) wire rope legs assembled on an oblong master link with shackles and snaps. The link for a **full** height assembly shall be a ¾ inch, oblong master link. The **low** height assemblies shall be assembled up on a WSF design oblong master link (see **FIGURE 16-1** below). Each sling or "leg" shall consist of ⅜ inch, 7 × 19, 316 stainless steel wire rope. Each end of the wire shall be provided with an eye made up of a 316 stainless steel thimble and a crimp or swage fitting. Each leg shall be provided with two (2) ⅜ inch load rated type galvanized steel shackles with locking cotter pins(one (1) at each end). Each leg shall have one (1) properly sized and load rated WICHARD snap shackle (heavy duty).

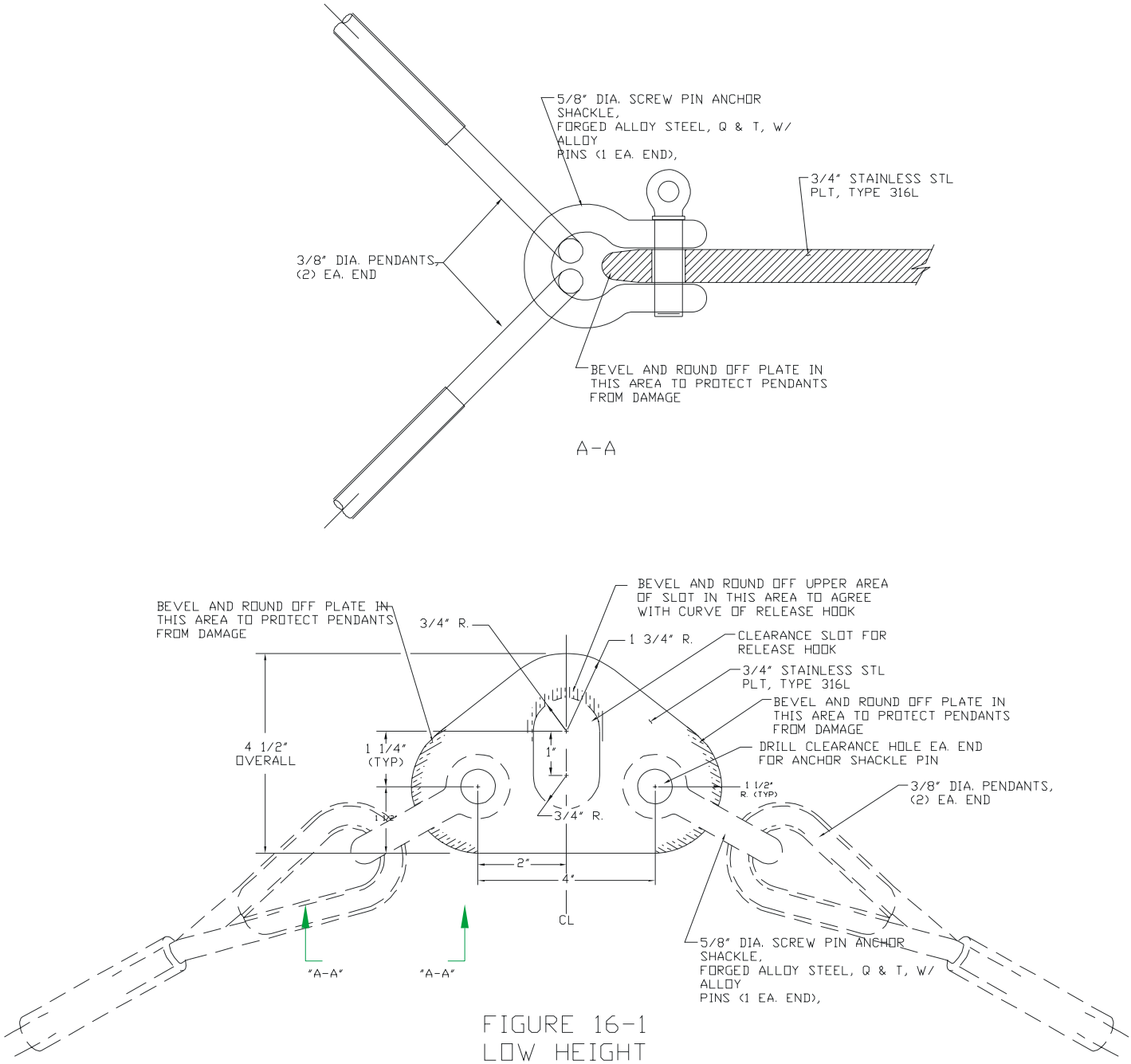

FIGURE 16-1
LOW HEIGHT
OBLONG MASTER
LINK

16.6.2 Sling Assembly Lengths

There are two (2) different sling assembly lengths required for current WSF Vessels. The forward and after leg lengths are different for each assembly. The low height lengths are critical as there is not much room to pick the boat and the already low angle of the slings will not allow any shorter slings. The sling assembly lengths (including the snap shackle) are as set forth in **TABLE 16-2** below:

TABLE 16-2

Sling Assembly Lengths

	Bearing to Bearing Overall Length	
Low Height Sling Assembly Lengths (Jumbo, and Super Class)	**Aft Leg**	**Fwd Leg**
	49 inches	64 inches
Full Height Sling Assembly Lengths (Issaquah, Rhododendron, and Steel/Electric Class)	62 inches	76 inches

TABLE 16-2 above demonstrates those critical dimensions as set forth for specific existing WSF Vessel Classes. They represent those lengths required to allow for lifting of the boat and slewing it in a balanced (level) plane into the launch position taking into consideration of the Rescue Boat Station overhead clearance. The Contractor shall determine the correct sling assembly lengths to allow a balanced lift from the boat cradles and slewing out for boat deployment to suit the Contractor's design. The Contractor should ship check existing WSF installations of the noted Classes to verify critical clearances.

16.6.3 Assembly Test

Each component shall be tested to 150-percent (150%) of its safe working load and marked or tagged indicating its safe working load. Documentation of the testing shall be included with each component.

16.7 RESCUE BOAT CRADLES

A boat cradle shall be provided for each Rescue Boat station which will allow for slewing of the Rescue Boats directly from their cradles without lifting, similar to those installed on WSF Issaquah Class Vessels (see WSF Drawing. No. 8000W-524-16-02, (*latest revision*). The cradles shall be of galvanized steel and stainless steel construction (matching the materials in the abovementioned drawing) with Douglas Fir chocks (dry pressure treated containing 0.40 pounds of preservative per cubic foot), fitted to the boat's hull. Cradle (chock) tops shall be covered with tight fitted leather or fire hose caps over closed-cell rubber where the boat rests on the cradle. Cradles shall be provided with all necessary gripes, fittings and release mechanisms to launch (swing out) the Rescue Boat.

16.8 DAVITS

The davits shall be of the single point, slewing variety suitable for handling a ZODIAC Hurricane H 472 Rescue Boat. The davits shall have stored slewing power so that the boat may be launched without any electrical power in case of emergency, as required by the regulations. The davits shall provide for the boat to be lowered by one (1) person from within the boat, as required by the regulations.

Two (2) WELIN LAMBIE LTD Type SARB 1.OE, or equal, single-arm slewing type boat davit systems shall be provided, one (1) for each Rescue Boat. The davits shall be electro-hydraulic type, and of a type previously approved by SOLAS and conforming to the requirements of 46 CFR 199.160, approved by the United States Coast Guard (USCG) under series 160.132 and 160.115 with documentation attesting to such, and shall comply with and be tested in accordance with 46 CFR §75, §94, §111, and §160. The davits shall be designed for a safe working load of 2,200 pounds under 15 degree (15º) list and 10 degree (10º) trim conditions, and shall include electrical power distribution, self-contained hydraulic power pack (HPU), accumulator, slewing cylinder, control panel, starter, emergency davit lights, motors, starters, controls and disconnects, stainless steel wire rope, sheaves, fairleads, hooks and other items and devices as may be required to provide complete, functional, and fully operational Rescue Boat handling systems.

Each electro-hydraulic boat davit winch shall include a dead-man type holding brake (operable from inside and outside the boat), centrifugal brakes to control speed of lowering under gravity, non-rotating crank handle (in lowering direction), automatic hollow pinion couplings, and remote hydraulic control panel. All mechanical parts shall be totally enclosed, with gearing running in an oil bath.

The hydraulic system shall be capable of infinitely variable launch and recovery speeds from 0 to 60 fpm, with variable slewing speeds and the ability to slew to fully outboard position in

approximately twenty-two (22) seconds via a hydraulic cylinder. Davit to be designed to safety factor of 6:1 and shop static load tests of 2.2 × S.W.L. In the event of power failure provisions to be made for:

1. Manual hoist.
2. Gravity lowering at 95 fpm.
3. Manual hand pump to allow for hand slew; all in accordance with the above noted U.S. Coast Guard regulations.

The hydraulic control panel shall include hand operated control valves (giving variable speed control) for hoist/lower and slew motions, relief valves, flow control valve, and stainless steel hydraulic piping with stainless steel fittings.

Each electro-hydraulic power pack shall be furnished fully assembled on the davit. Each power pack system shall be enclosed in an acoustic enclosure, with the electrical controller mounted exterior to the enclosure. The power pack shall include the following major components:

1. Control Station,
2. Accumulator,
3. One (1) watertight, totally enclosed, continuously rated drive motor,
4. Reservoir,
5. One (1) electric motor, similar to “item 3” above, to drive the hydraulic pump that maintains constant system pressure to charge accumulator.

Each davit shall be furnished with a stored power hydraulic system that permits deployment of the boat without the use of Vessel's power.

Provide controls for “HOIST”, “LOWER”, and “SLEW” with directional indicators which clearly identify the direction of travel. Control panel to be located inboard of the davit arm in a position as approved by the WSF Representative.

All components for electrical motors and pumps shall be in accordance with Sections 50, 74, and 87 of the Technical Specification.

Provide a main line emergency disconnect switch in accordance with 46 CFR §111.95.

The davits shall have a minimum ten (10) foot pivot radius. A pedestal mount for welding to the deck shall be provided. Bolts for securing the davit to the pedestal shall be provided.

Provide limit switches adjusted to interrupt the "HOIST" circuits before the hoist wire hook reaches the davit sheave.

The davits shall have a cable (wire rope) suitable for launching the Rescue Boat from the davit's installed location on the Lower Vehicle Deck level. Provide end stops to prevent the davit from slewing into the Vessel's structure or exceed its linear travel capabilities.

The davits shall a heavy duty coating system to prevent corrosion. Uncoated materials shall be manufactured from corrosion resistant materials.

Each Davit shall be furnished with a spare parts list to allow the crew to order spare parts. The parts list shall detail the major parts of the davit that can be purchased from the manufacturer as well as the source and part numbers of the subassemblies. An operator and maintenance manual for the davit shall be provided. The manual must describe safe operation of the davit as well as proper loading arrangements.

16.9 JACOBS LADDERS

Provide two (2) rope type Jacobs Ladders, and attachments, one (1) at each Rescue Boat Station. See the *LIFTING PADEYES* Subsection in Section 5 of the Technical Specification for ladder padeye requirements. Ladders length shall be sized to extend from the padeyes on the Curtain Plate, as set forth in the above mentioned *LIFTING PADEYES* Subsection, and down to the launched Rescue Boat. The tops of each ladder shall be provided with two (2), LIFT SUPPORT INTERNATIONAL Ladder Hook Quik-Loc, or equal, stainless steel carabineers to allow for quick clipping onto the ladder padeyes.

Design and provide stainless steel exterior trunk near each boat for Jacobs Ladder stowage. Prepare and coat same as the *VEHICLE DECK OVERHEAD LIFE JACKET LOCKERS* Subsection in this Section of the Technical Specification.

16.10 LIFE JACKETS

For WSF Fleet-wide Standardization purposes, STERNS, Type 1, Model 63 (adult) and Model 67 (children), Style 195 life jackets, and stowage for these life jackets, shall be provided in accordance with 46 CFR §160 and all Authoritative Agency requirements.

NOTE: Where the words “life jacket”, “life preserver”, “personal flotation device”, and/or “PFD” are used in this Contract, they shall have the same meaning and be interchangeable.

Shelves, bins, and lockers for the stowage of life jackets shall be provided throughout accommodation and work spaces as required by the Authoritative Agencies. In addition, life jacket lockers with drop chutes/sloped bottoms and doors with manually-operated quick-release mechanisms shall be installed integral to the casing within the Vehicle Deck area near the bottom of the Passenger Deck to Lower Vehicle Deck stairways. The intent of these lockers shall be to drop life jackets under the force of gravity onto the Lower Vehicle Deck in the event of an emergency in accordance with regulations. The pull handles for the quick-release mechanisms shall be accessible and actuated from the Lower Vehicle Deck.

Life jackets for the Lower Vehicle Deck shall be stowed in lockers on the Upper Vehicle Deck ramps as described in the *VEHICLE DECK OVERHEAD LIFE JACKET LOCKERS* Subsection in this Section of the Technical Specification.

Life jacket lockers shall be labeled as required by U.S. Coast Guard regulations.

All life jackets shall be properly stowed on the Vessel in the designated locations prior to the delivery voyage, and as otherwise required for safety and conformance with Authoritative Agency requirements during Sea Trials. Eight (8) “YELLOW” canvas bags, PORT MADISON CANVAS, or equal, large enough to store ten (10) children's life jackets are to be provided and shall be stenciled "**CHILDREN'S LIFE JACKETS**" in “BLACK” 1½ inch high lettering in accordance with **Fig. 1**, *Type 1 - Plain Letters and Numerals* of ASTM F906. Lockers shall be labeled in accordance with the Technical Specifications and as set forth in the requirements of 46 CFR, Subchapter W.

Provide a Life Jacket Stowage Plan which will assure compliance with 46 CFR §75.40-15 and which clearly delineates, by deck and space, the type of life jacket and its exact stowage location on the Vessel. The Plan shall be developed and delivered in accordance with the requirements of the *VEHICLE DECK OVERHEAD LIFT JACKET LOCKERS* Subsection, and the *SUN DECK PASSENGER LOUNGE LIFE JACKET LOCKERS* Subsection in this Section of the Technical Specification.

16.11 RING LIFE BUOYS

Life buoys with water lights and hangers shall be provided as required by the Authoritative Agencies.

Provide thirty (30) inch diameter ring life buoys and brackets as required by regulation. For WSF Fleet-wide Standardization purposes, the ring life buoys shall be JIM BUOY – Model GX 30, "ORANGE" colored, and fully comply with the requirements of 46 CFR §160.050. Life ring buoys shall be provided with water lights manufactured by GUEST CORP. – Model 375, or equal, and shall have two (2) 15 fathoms lengths of ½ inch diameter line attached, all to comply with 46 CFR §75.43-10. Issue dates of ring life buoy inspections shall be provided for thirty (30) days (or less) prior to delivery of the Vessel. All ring life buoys shall have the Vessel's name and home port (SEATTLE) stenciled in "BLACK" 3½ inch high lettering in accordance with **Fig. 1**, *Type 1 - Plain Letters and Numerals* of ASTM F906 and as set forth in the requirements of 46 CFR, Subchapter W. Ring life buoy lettering layout shall be approved by the WSF Representative prior to being stenciled on the buoy.

16.12 RESCUE EQUIPMENT

Provide the following equipment within the specified lockers prior to Vessel delivery:

16.12.1 First Aid Area

WSF will furnish as Owner Furnished Equipment (OFE) one (1) first aid Trauma Back Pack, by MED TECH SWEDEN, Model BTS Trauma Pack 53620. The Contractor shall provide space for the trauma pack when designing the first aid area in the Purser's Office.

Provide one (1) backboard in the first aid area in the Purser's Office, manufactured by DRESSINE INC., Model Startrek 2000, or equal, "ORANGE" colored, and one (1) set of spider straps, made of two (2) inch webbing and tested to 6,000 pounds, for the backboard, manufactured by BDM MEDICAL, or equal.

16.12.2 Emergency Squad Lockers

Locker stowage shall provide shelves, brackets, hooks, and storage to store and protect the equipment from physical shock, temperature shock, theft, vandalism, and service environment conditions as set forth in Section 1 of the Technical Specification.

Each Emergency Squad Locker shall be outfitted as set forth in the *Emergency Squad Lockers* Subsection in Section 13 of the Technical Specification.

Provide a label plate identifying the locker contents.

Label plates shall be of laminated plastic or engraved non-corroding metal no less than 8½ × 11 inches, phenolic "RED" with "WHITE" lettering. Lettering shall be no less than ¼ inch in height and shall be all "upper case". It shall be highly contrasted to the plate's background to allow reading on low light conditions. Wording shall be clear, and concise.

16.12.3 Rescue Boat Station Storage Locker

Design and provide a Rescue Boat Station equipment storage locker in each boat station enclosure. The locker shall be built integral to the adjacent gear locker bulkhead on the inboard forward end of each Rescue Boat Station and shall be closed with watertight, lockable double doors. Each locker shall be sized approximately 72 inches high × 60 inches wide × 24 inches deep. The floor of the locker shall be approximately four (4) inches above the surrounding deck area. Installation shall include shelves and hooks to accommodate all locker equipment. Provide and install the equipment in **TABLE 16-3** below, in each locker.

TABLE 16-3

Rescue Boat Storage Locker Equipment

Qty is per Rescue Boat Station

Qty	Equipment	Manufacturer
1	Rescue Boat towing bridle	
1	Towing line (50 foot long) **TABLE 16-1**	
6	Cluster straps	
2	USCG approved Type V anti-exposure coverall work suit. Sizes XL and M	MUSTANG Brand, or equal
1	Immersion Suit, with water rescue turnout bag	MARSARS Ocean Rescue, or equal

TABLE 16-3, cont'd

Rescue Boat Storage Locker Equipment

Qty is per Rescue Boat Station

Qty	Equipment	Manufacturer
4	Flotation Vests, size universal	STEARNS Workforce II, or equal
1	Rescue Sling	MARSARS Model Cold Water Rescue Sling (WSF Fleet-wide Standard)
1	Rescue Swimmer tether line, 150 feet long with a breaking strength of 1800 lbs	MARSARS
1	Jason's Cradle	LAND AND MARINE PRODUCTS Contact: Jeff Larson 1094 SE St. Patricks Court Port Orchard WA 98367 (360) 895-4001, 1-877-900-4001 (WSF Fleet-wide Standard)
1	STOKES Litter with floatation collar and leg divider	LIFE SUPPORT INTERNATIONAL, or equal

Provide a phenolic "RED" with "WHITE" lettering label plate identifying all locker contents on the outside of one (1) door of the locker.

Provide instructions on the use and rigging of equipment. Instruction plates shall be of laminated plastic or engraved non-corroding metal no less than 8½ inches × 11 inches. Lettering shall be no less than ¼ inch in height and shall be all upper case. It shall be highly contrasted to the plate's background to allow reading on low light conditions. Wording shall be clear, and concise with operating procedures clearly and logically

sequenced. All instructions shall be permanently attached to the inside of the locker doors.

The design of the operating instruction plates shall be submitted to the WSF Representative for approval prior to manufacture and installation during the Phase III Detail Design stage.

16.13 VEHICLE DECK OVERHEAD LIFE JACKET LOCKERS

Provide four (4) overhead life jacket lockers, with releases, on the inboard edge of the Upper Vehicle Deck ramp, near the ends of each Machinery Casing. Design and installation shall be in generally accordance with those on the existing *Jumbo Mark II* Class Ferries, but shall be fabricated from Type 316L stainless steel framing, plate, weld mesh (bottom drop doors), hinges, latches, release cable, locks, springs and other hardware to ensure continued free operation and prevent corrosion. See WSF Drawing No. A76-016-06 for the Jumbo Mark II Ferries for general stowage design. The structure shall be adequately supported during construction and welding sequenced to minimize distortion. See the *WELD MESH ENCLOSURES* Subsection in Section 3 of the Technical Specification. Minimum capacity of each locker shall be 100 life jackets.

Both insides and outside of the lockers shall be grit blasted to SSPC-SP 6 "*Commercial Blast Cleaning*", and coated the same as the surrounding bulkhead structure as specified in Section 14 of the Technical Specification. ***Care shall be exercised during grit blasting to prevent heat deformation of the locker plating***.

All lockers shall be operationally tested to the satisfaction of the USCG local OCMI Representative and WSF to demonstrate proper storage and deployment of all life jackets.

16.14 SUN DECK PASSENGER LOUNGE LIFE JACKET LOCKERS

Provide a Life Jacket Locker at each End of the Sun Deck, sized and located to suit the Contractor's Phase II Design and U.S. Coast Guard regulations. Design and fabrication shall be capable of storing numbers and types of life jackets as required by regulation and shall be located as part of a Fan Room, Cleaning Gear Locker, Unisex Restroom, Life Jacket Locker cluster inside each Sun Deck Passenger Lounge area. Construction shall include galvanized sheet metal linings, small stainless steel padlock hasp, four (4) shelves and fiberglass gratings.

16.15 SPARE PARTS AND INSTRUCTION MANUALS

In addition to all other spare parts, provide one (1) additional equipment package for every two (2) Rescue Boats to provide an inventory of replacement gear.

Provide a list of recommended spare parts and special tools for those items which are Contractor furnished, together with instruction manuals which may be required, to maintain and service provided equipment and accessories as required by Sections 86, 100 and 102 of the Technical Specification.

16.16 TESTS, TRIALS AND INSPECTIONS

Tests and/or trials shall be in accordance with this Section and Section 101 of the of the Technical Specification.

Inspections shall be performed as defined in this Section and in Sections 1 and 2 of the Technical Specification.

16.17 PHASE II TECHNICAL PROPOSAL REQUIREMENTS

The deliverables required by Section 100 of the Technical Specification and the Authoritative Agencies, shall be provided during the Phase II Technical Proposal stage of Work in accordance with the requirements of Section 100 of the Technical Specification:

See Section 100 of the Technical Specification for additional requirements regarding technical documentation.

16.18 PHASE III DETAIL DESIGN AND CONSTRUCTION REQUIREMENTS

The following deliverables, in addition to other deliverables required by Section 100 of the Technical Specification and the Authoritative Agencies, shall be provided during the Phase III Detail Design stage of Work in accordance with the requirements of Section 100 of the Technical Specification:

A. Lifesaving Calculations

B. Rescue Equipment Instructions

Lifesaving Plan shall depict the general arrangement of life jackets, rescue boats, embarkation areas, and marine evacuation life rafts and slides. The plan shall also show the orientation of rescue boats, life rafts, slides, and life jackets, as prepared for deployment and as deployed, in extreme (worst case) operating conditions.

The ***Lifesaving Calculations*** shall demonstrate and affirm, as applicable, compliance with regulatory requirements as regards quantities, types and sizes of required equipment.

See Section 2 of the Technical Specification for requirements for equipment foundation drawings and related load and stress calculations.

Crew training regarding the operation and maintenance of lifesaving equipment shall be provided in accordance with Section 50 of the Technical Specification.

The arrangement and details drawings shall show clear dimensions in way of the boats, and escape slides for both the stowed and rigged out positions with respect to exterior walkways, ship's structure, and other adjacent features.

See Section 100 of the Technical Specification for additional requirements regarding technical documentation.

See Section 101 of the Technical Specification for equipment testing requirements.

(END OF SECTION)